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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,458	07/27/2006	Hajime Yamamoto	01272.519972.	2268

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FITZPATRICK CELLA HARPER & SCINTO
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NEW YORK, NY 10112

EXAMINER

ZIMMERMANN, JOHN P

ART UNIT	PAPER NUMBER
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2861

MAIL DATE	DELIVERY MODE
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12/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary	Application No.	Applicant(s)	
	10/587,458	YAMAMOTO, HAJIME	
	Examiner	Art Unit	
	John P. Zimmermann	2861	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12 October 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "561" (Specification, Page 6) and "61" (Figure 13C) have both been used to designate "the refracted incident light beam." Additionally, the drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "209" has been used to designate both "an encoder scale" (Specification, Page 20, Line 22 and Figure 5) and the individual steps in the process (Figure 6), and reference character "503" has been used to designate both the "cover" (Figure 13B) and the "container" (Figure 13B). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. Figures 13A, 13B, & 13C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: #199 (Figure 1B), #391 & #392 (Figure 9C), #521 (Figure 13B). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is

being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. Given that the application is subjected to PCT Rule 11, notably PCT 11.13 Special Requirements for Drawings:

- (l) Reference signs not mentioned in the description shall not appear in the drawings, and vice versa.
- (m) The same features, when denoted by reference signs, shall, throughout the international application, be denoted by the same signs.

The examiner respectfully points out that this objection in no way "imposes requirements beyond those imposed by the Patent Cooperation Treaty," and is merely pointing out a specific rule that was not complied with, a rule "to require new drawings if the drawings were published without meeting all of the requirements under the PCT for drawings," that echoes PCT Rule 11.13.

Specification

7. The disclosure is objected to because of the following informalities: There are what appear to be numerous typographical errors to include: Labeling the "negative pressure generating member housing chamber both #5 and #505 (Specification, Page 15, Lines 8 & 15). Labeling the carriage both #204 and #205 (Specification, Page 19, Line 14). Listing Steps S1 – S5 with no reference in the Figures and mentioning only three different steps (Specification, Page 21, Line 15 and following).

Appropriate correction is required.

8. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. **Claims 1-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Koitabashi et al.**, (US 6,012,808 A) in further view of **Kosugi et al.**, (US 7,101,012 B2).

- a. As related to independent **claim 1**, Koitabashi et al. teach a liquid tank having a liquid accommodating chamber directly accommodates a liquid (Koitabashi et al. – Figure 62A, Reference #4006, shown below), the tank comprising: a liquid remaining amount sensing module including an optical reflector disposed on a wall of a member

forming the liquid chamber so that a reflecting surface of the optical reflector faces an interior of the liquid accommodating chamber (Koitabashi et al. – Figure 62A, Reference #4042, shown below), wherein the member has a light transmittance portion at a wall opposite the wall on which the liquid remaining amount sensing module is disposed (Koitabashi et al. – Detailed Description, Column 32, Lines 21-35 and Figure 62B Reference #4042 & Arrows, shown below) such that light can incident onto the optical reflector from an exterior and the light reflected by the optical reflector can exit to the exterior, through the light transmittance portion and the liquid accommodating chamber.

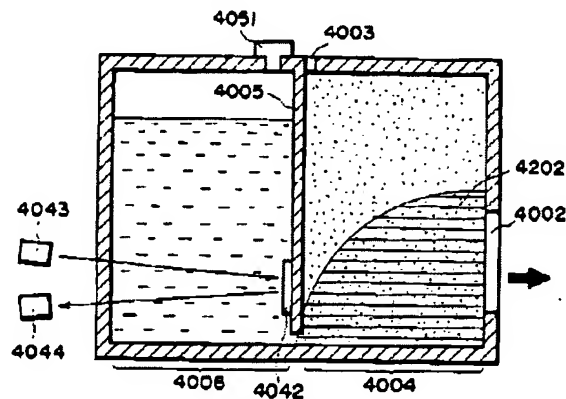


FIG. 62A

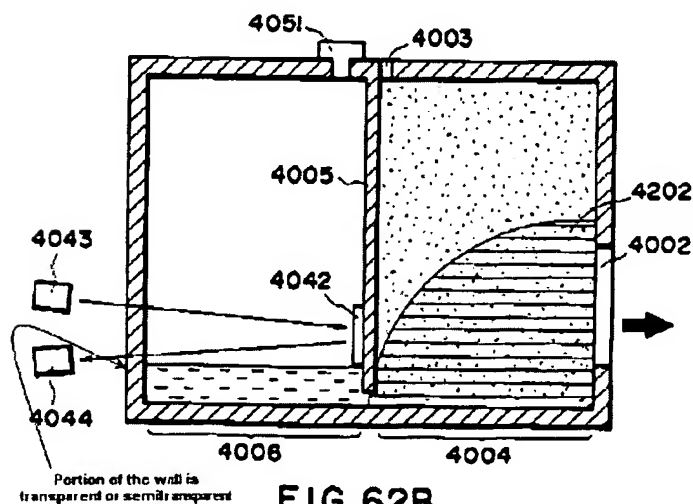
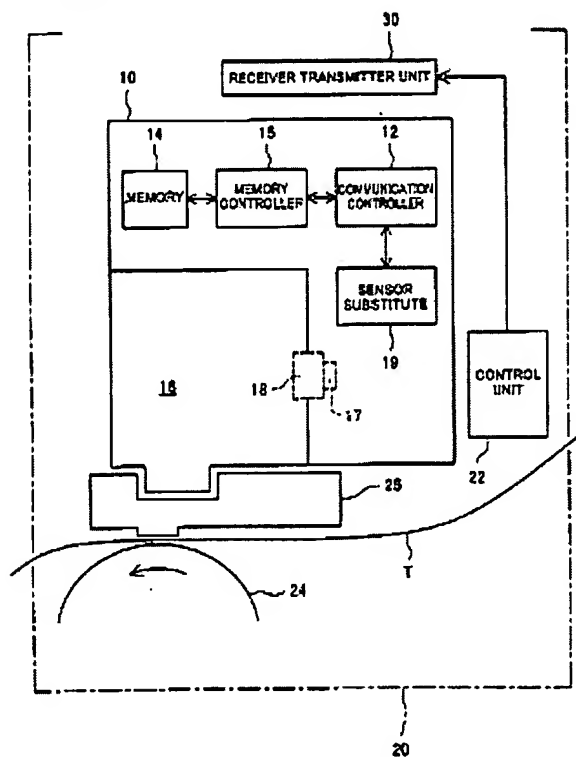


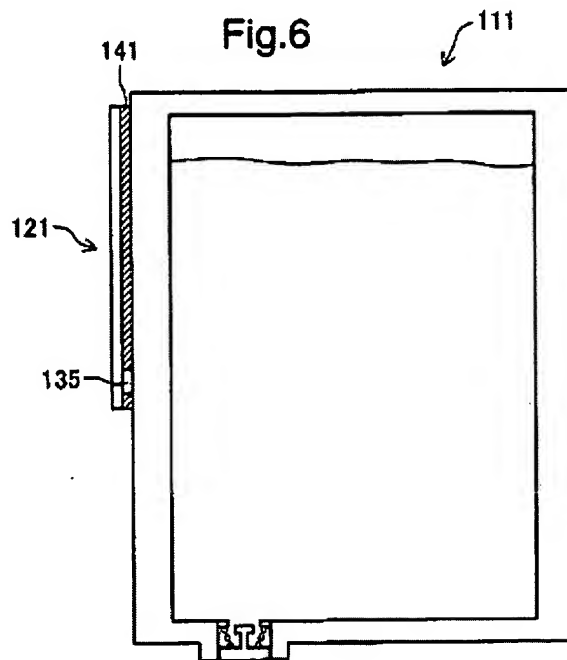
FIG. 62B

b. Continuing with **claim 1**, while Koitabashi et al. teach the majority of **claim 1**, as shown above, they *do not* teach an information storage element disposed on the liquid tank as part of the sensing module. *However*, Kosugi et al. teach a liquid tank with a liquid remaining amount sensing module including an information storage element [i.e. memory] disposed on the tank itself (Kosugi et al. – Description, Column 5, Lines 8-11 and Figure 1, Reference #14, shown below).

Fig.1

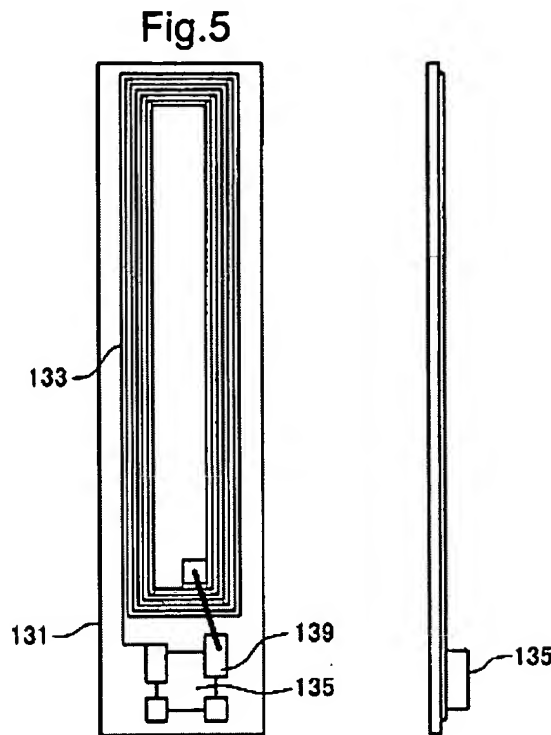


c. As related to dependent **claim 2**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 1** for the reasons above and additionally teach the liquid remaining amount sensing module further has a support member [i.e. face and adhesive layer] on which the information storage element is mounted (Kosugi et al. – Description, Column 9, Lines 14-22 and Figure 6, Reference #111 & #141, shown below).



d. As related to dependent **claim 3**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 1** for the reasons above and additionally teach a wiring pattern formed on the support member (Kosugi et al. – Description, Column 9, Lines 1-13 and Figure 5, Reference #139, shown below). While Kosugi et al. do not specifically teach there being an optical reflector as part of the sensing module, Koitabashi et al. do specifically list the optical reflector as part of the sensing module and

given that, it would have been obvious to one of ordinary skill in the art to include the optical reflector as part of the sensing module in addition to or in lieu of any of the other components Kosugi et al. teach.



e. As related to further dependent **claim 4**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 3** for the reasons above and additionally teach a wiring pattern is plated (Kosugi et al. – Description, Column 9, Lines 8-13 and Figure 5, Reference #139, shown above).

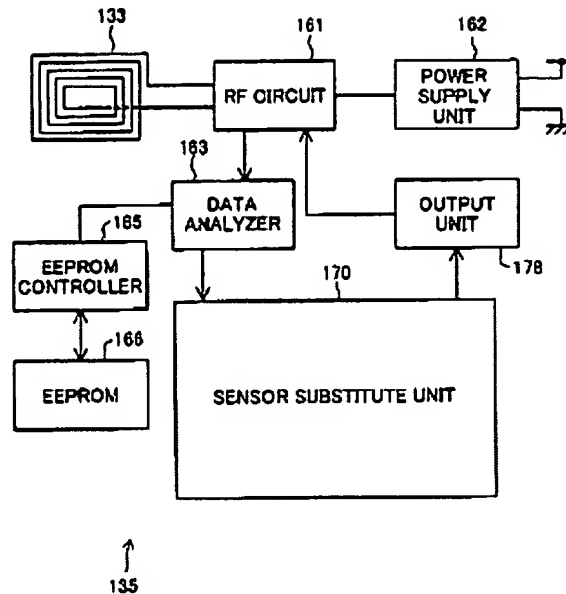
f. As related to dependent **claim 5**, the combination of Koitabashi et al. and Kosugi et al. teaches the limitations of **claim 1** for the reasons above and additionally teaches the information storage element consists of a terminal used to electrically connect the element to an external device (Koitabashi et al. – Detailed Description, Column 30, Lines

35-53 and Column 31, Lines 36-40) and while the combination does not specifically teach the information storage element is mold-packaged, and the optical reflector is formed of a lead frame integrated with a mold package member it would have been obvious to one of ordinary skill in the art to package the electrical components to include the electrodes that were to be placed inside the ink chamber in a mold-package if for no other reason than to protect the components from corrosion and other deterioration.

g. As related to dependent **claim 6**, the combination of Koitabashi et al. and Kosugi et al. teaches the limitations of **claim 1** for the reasons above and while the combination does not specifically teach the information storage element is mold-packaged, and the optical reflector is formed on one side of a mold package member for the information storage element it would have been obvious to one of ordinary skill in the art to package the electrical components to include the information storage elements, that were to be placed inside the ink chamber, in a mold-package if for no other reason than to protect the components from corrosion and other deterioration.

h. As related to dependent **claim 7**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 1** for the reasons above and additionally teach the liquid remaining amount sensing module is disposed on an outer surface of housing of the liquid tank and further has a terminal on a part facing the outer surface, the terminal being used for an electric connection to an external device (Kosugi et al. – Description, Column 9, Lines 25-42; Figure 6, Reference #121, shown above; and Figure 7, Reference #133, #161, & #162, shown below).

Fig.7



- i. As related to dependent **claim 8**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 1** for the reasons above and additionally teach the liquid remaining amount sensing module can transmit and receive information to and from an external device in a non-contact manner (Kosugi et al. – Description, Column 8, Lines 3-8; Column 9, Lines 25-42; and Figure 7, Reference #133 & #161, shown above).
- j. As related to dependent **claim 9**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 1** for the reasons above and additionally teach the liquid remaining amount sensing module is fixed to a wall surface forming a ceiling portion of the liquid accommodating chamber when the liquid tank is placed in a use position (Kosugi et al. – Description, Column 9, Lines 18-22).
- k. As related to dependent **claim 10**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 1** for the reasons above and additionally teach ink is

1. As related to dependent **claim 11**, the combination of Koitabashi et al. and Kosugi et al. teach the limitations of **claim 1** for the reasons above and additionally teach an ink jet printing apparatus in which the liquid tank is detachably installed and which executes printing by ejecting a liquid supplied by the liquid tank (Koitabashi et al. – Abstract & Figure 4, Reference # 20, shown below).

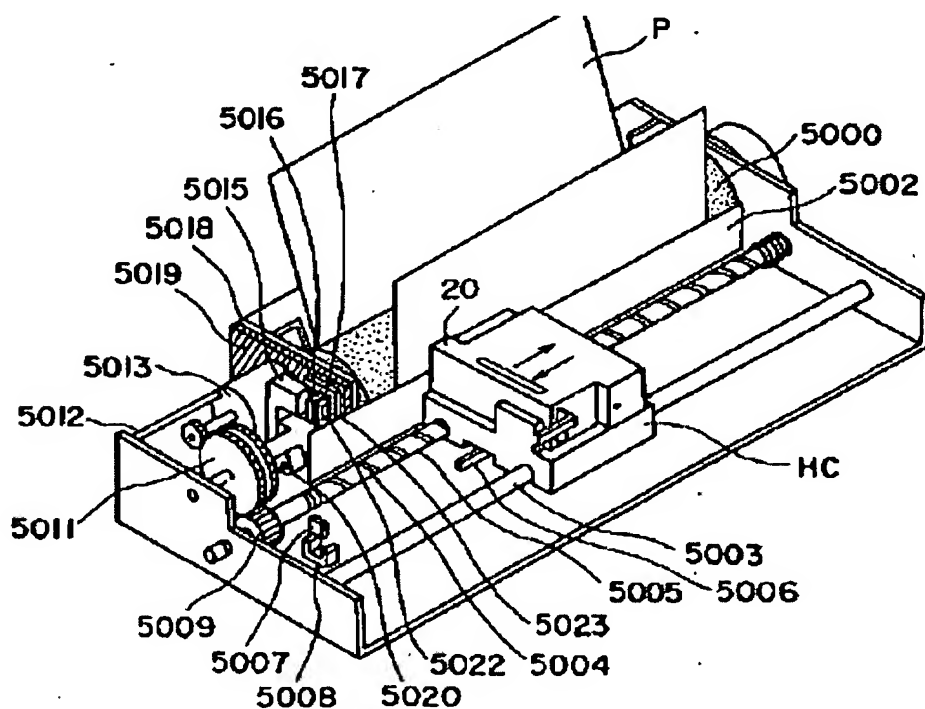


FIG. 4

m. Continuing with **claim 11**, Koitabashi et al. teach the apparatus includes a light emitting means for externally applying light to the wall of the liquid tank which is opposite the wall on which the liquid remaining amount sensing module is placed

(Koitabashi et al. – Figure 62A, Reference #4043, shown previously); a light receiving means for detecting the resulting quantity of light after being applied by the light emitting means, reflected by the reflector of the liquid remaining amount sensing module and finally exit to the exterior of the liquid tank (Koitabashi et al. – Detailed Description, Column 32, Lines 29-32 and Figure 62A, Reference #4044, shown previously).

Additionally, both Koitabashi et al. and Kosugi et al. teach a printing apparatus with a means for calculating the amount of liquid remaining in the liquid tank and means for providing information on the calculated remaining amount to the information storage element of the liquid remaining amount sensing module. (Koitabashi et al – Detailed Description, Column 30, Lines 35-54 and Column 31, Lines 36-40 and Figure 54, Reference #4200, shown below & Kosugi et al. – Abstract, and Figure 1, Reference #14 & #22, shown previously), and Koitabashi et al. specifically teaches the calculating means does so on the basis of the quantity of light detected by the light receiving means (Koitabashi et al – Detailed Description, Column 30, Lines 35-54 and Column 31, Lines 36-40).

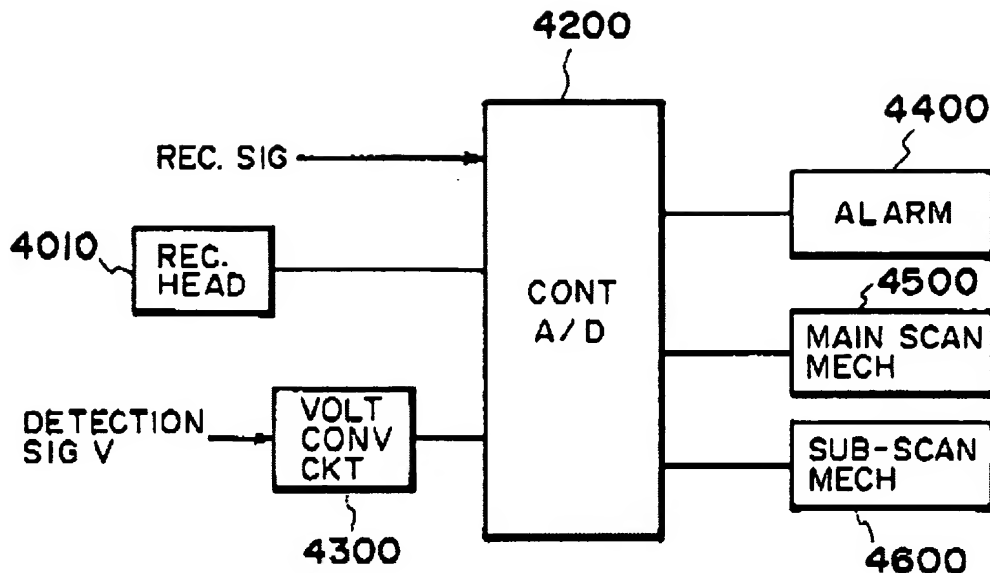


FIG. 54

n. As related to further dependent **claim 12**, the combination of Koitabashi et al. and Kosugi et al. teaches the limitations of **claim 11** for the reasons above and additionally teaches printing control is performed using the information on the calculated amount of liquid remaining in the liquid tank (Kosugi et al. – Abstract).

o. As related to further dependent **claim 13**, the combination of Koitabashi et al. and Kosugi et al. teaches the limitations of **claim 11** for the reasons above and additionally teaches the liquid remaining amount is calculated using a characteristic curve indicating a change in received light quantity detected by the light receiving means, with respect to a change in the length of a part of an optical path in which the liquid is present, the light applied by the light emitting section traveling through the optical path until the light is received by the light receiving section (Koitabashi et al – Detailed Description, Column 32, Lines 21-64).

p. As related to further dependent **claim 14**, the combination of Koitabashi et al. and Kosugi et al. teaches the limitations of **claim 13** for the reasons above and additionally teaches a standard reflector placed where light emitted by the light emitting means is incident and the incident light is reflected and then enters the light receiving section while the liquid tank is not located above the optical path of the light emitted by the light emitting means (Koitabashi et al. – Figure 62A, Reference #4043, #4042, & #4044, shown previously).

q. As related to further dependent **claim 15**, the combination of Koitabashi et al. and Kosugi et al. teaches the limitations of **claim 14** for the reasons above and additionally teaches light emitted by the light emitting section is incident on the standard reflector, the liquid remaining amount sensing module is calibrated on the basis of a measurement of the quantity of light reflected by the standard reflector and received by the light receiving means (Koitabashi et al. – Figure 62A, Reference #4043, #4042, & #4044, shown previously and Kosugi et al. – Abstract and Description, Column 11, Lines 28-57).

Given the same field of endeavor, specifically a liquid tank, one for use as an ink storage container in an ink jet printing apparatus, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the ink container and the ink jet recording apparatus with a feature for determining the remaining amount of ink or a low ink status that includes all of the above mentioned characteristics and what is well known in the art of ink containers and ink level detection as taught by Koitabashi et al. with the types and locations of the components involved with the detection and the storage and transmittal of such data as taught by Kosugi et al., in an effort to provide a ink container and an ink jet recording apparatus with an ink container

and ink level detection system that provides the remaining amount of ink that is detected by any of a number of means (Koitabashi et al. – Detailed Description, Column 31, Lines 36-40) while providing a system for determining the level of ink remaining and transmitting the information to be used by a control system and applying it as need for controlling of the printing (Kosugi et al. – Abstract and Summary, Column 2).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Causley et al. (US 4,551,734 A) teach an ink cartridge with an ink level sensor components of which are located inside the ink tank. Stapleton (US 5,596,351 A) teaches an ink level sensing system mounted on the carriage/moving portion of the ink supply system, to include optical sensors. Nakano et al. (US 6,012,794 A) teach an inkjet printing apparatus and cartridge which determines residual ink amount using components mounted inside the ink tank(s) of the ink cartridge. Murakami et al. (US 6,616,255 B2) teach an ink cartridge and a printing apparatus the combination of which detects the remaining amount of ink in the ink cartridge. Asauchi et al. (US 6,994,415 B2) teach an ink cartridge and printing apparatus with a level sensing module located as part of the ink tank to include a memory module.

13. ***Examiner's Note:*** Examiner has cited particular Figures & Reference Numbers, Columns, Paragraphs and Line Numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of


the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Zimmermann whose telephone number is 571-270-3049. The examiner can normally be reached on Monday - Thursday, 7:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on 571-272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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